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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/846,047	04/30/2001	Zhizang Chen	10007763-1	4496

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
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EXAMINER

ROSE, KIESHA L

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 07/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/846,047

Applicant(s)

CHEN ET AL. 

Examiner

Kiesha L. Rose

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 48-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the election filed 13 May 2002.

Election/Restrictions

Claims 48-63 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected method of making a semiconductor device, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 6.

Applicant's election without traverse of claims 1-47 in Paper No. 5 is acknowledged.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the sidewalls must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Fig. 2, #36

Fig. 7, #54

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Independent claims 10 and 11 are dependent on claim 1, independent claims 23, 24 and 25 is dependent of claim 17 and independent claim 26 is dependent of claim 25.

Claim Rejections - 35 USC § 112

Claims 36-42 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 36-42 disclose a first and second chamber and sidewalls, which are not disclosed in the specification.

Claims 17-22 recite the limitation "based-based dielectric layer" in claim 17.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakatani et al. (U.S. Patent 6,008,576).

Nakatani discloses a flat display (Figs. 2 and 3) that contains an integrated circuit with a substrate (6), an emitter (3a) formed on substrate for emitting a visible light source, a lens (8) coated with a transparent conducting surface to capture electrons and for focusing the visible light source and a circuitry for operating the emitter.

Claims 11,13,14 and 25-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Xia (U.S. Patent 6,034,479).

Xia discloses an emission display (Figs. 1 and 3) that contains an electronic device which is a display device that contains an emitter (13) capable of emitting energy, an anode (18) for receiving the emitted energy and generating a first effect in response to the receiving the emitted energy and a second effect in response to not receiving the emitted energy which is a display screen that creates a visible effect in response to receiving emitted energy and includes at least one phosphors operable for

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emitting photons, an integrated circuit with the emitter and a focusing device for converging the emissions from the emitter. In regards to claims 25-28, a microprocessor (33), the electronic device (34)(storage device or display device (Column 3, lines 50-53)) coupled to the microprocessor and a memory (31) coupled to the microprocessor which is operable of executing instructions from the memory to transfer data between the memory and the electronic device.

Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Gibson (U.S. Patent 5,557,596).

Gibson discloses a storage device (Fig. 1A) that contains an integrated circuit (100) including the emitter (104) which creates an electron beam current, a storage medium (106) in close proximity to the emitter, a storage area (108) being in one of a plurality of states to represent the information stored in that storage area, an effect is generated when the electron beam current bombards the storage area, the magnitude of the effect depends on the state of the storage area and the information stored it the storage area is read by measuring the magnitude of the effect.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuman (U.S. Patent 6,023,124).

Chuman discloses an electron emission display device (Fig. 1) that contains a substrate (10), an emitter capable of emitting energy that contains an electron supply (12), a 500 Angstroms thick SiNx dielectric layer (13) (Column 5, lines 30-33) disposed on the electron supply, a molybdenum cathode layer (15) disposed on the silicon based dielectric layer, an anode structure (2) capable of receiving the emitted energy and creates a visible effect and voltage supplies for operating the emitter. In regards to the electron supply, dielectric layer and cathode layer being subjected to an annealing process, a "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear. Even though product -by [-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In*

re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted)." In regards to claims 4-6, Chuman discloses an emission current with a max current of 10⁻³ Amps per square centimeter. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the emission current greater than 10⁻³ Amps per square centimeters to provide high luminance.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Xia in view of Gibson.

Xia discloses an emission display (Fig. 4) with a reading circuit (40) and discloses all of the limitations except for the electronic device to be a mass storage and the anode to be a recording medium. Whereas Gibson discloses a storage device (Fig. 1a) that contains an anode storage area (108) or recording medium. The anode storage area is a recording medium to provide a medium to storage data. (Column 2, lines 1-9) Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the emission display of Xia by incorporating a mass storage device and recording medium to provide a medium to storage data as taught by Gibson.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuman in view of Gibson.

Chuman discloses an electron emission display device (Fig. 1) that contains a substrate (10), an emitter capable of emitting energy that contains an electron supply (12), a 500 Angstroms thick SiNx dielectric layer (13) disposed on the electron supply, a molybdenum cathode layer (15) disposed on the silicon based dielectric layer, an anode

structure (2) capable of receiving the emitted energy and creates a visible effect and voltage supplies for operating the emitter. In regards to the emitter being subjected to an annealing process, a "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear. Even though product -by [-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted)."

Chuman discloses all of the limitations except for the device to be a storage device.

Whereas Gibson discloses a storage device (Fig. 1A) that contains an integrated circuit (100) including the emitter (104) which creates an electron beam current, a storage medium (106) in close proximity to the emitter, a storage area (108) being in one of a plurality of states to represent the information stored in that storage area, an effect (signal current) is generated when the electron beam current bombards the storage

area, the magnitude of the effect depends on the state of the storage area and the information stored in the storage area is read by measuring the magnitude of the effect. A storage device is formed to provide a medium to store data. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron emission device of Chuman by incorporating a storage device to provide a medium to store data as taught by Gibson.

Claims 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuman in view of Moyer (U.S. Patent 5,473,218).

Chuman discloses an electron emission display device (Fig. 1) that contains a substrate (10), an emitter capable of emitting energy that contains an electron supply (12), a 500 Angstroms thick SiNx dielectric layer (13) (Column 5, lines 30-33) disposed on the electron supply, a molybdenum cathode layer (15) disposed on the silicon based dielectric layer, an anode structure (2) capable of receiving the emitted energy and creates a visible effect and voltage supplies for operating the emitter. In regards to the electron supply, dielectric layer and cathode layer being subjected to an annealing process, a "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not.

Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear. Even though product -by [-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted)." In regards to claims 19 and 21-22, Chuman discloses an emission current with a max current of 10^{-3} Amps per square centimeter and an emission rate of 0.01 Amps. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the emission current greater than 10^{-3} Amps per square centimeters and an emission rate of 0.01 Amps to provide higher luminance. (Column 2, lines 24-26) Chuman discloses all of the limitations except for an insulator layer formed on electron layer with an aperture. Whereas Moyer discloses an electron emission control (Fig. 3) that emits electron as well as photons and contains an insulating layer (38) with an aperture formed there through. The insulating layer is formed to insulate the electron supply layer. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron emission device of Chuman by incorporating an insulating layer for insulating the electron supply layer as taught by Moyer.

Claims 29-35 and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chuman and Moyer and Huang (U.S. Patent 5,702,281).

Chuman discloses an electron emission display device (Fig. 1) that contains a substrate (10), an emitter capable of emitting energy that contains an electron supply (12), a 500 Angstroms thick SiNx dielectric layer (13) (Column 5, lines 30-33) disposed on the electron supply, a cathode layer (11) disposed on the silicon based dielectric layer, a conductive layer (15). In regards to the electron supply, dielectric layer and cathode layer being subjected to an annealing process, a "*product by process*" claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972); *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); *In re Fessmann*, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a "*product by, all of*" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "*product by process*" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear. Even though product-by [-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted)." In regards to claims 30, 32-34 and 44-45, Chuman discloses an emission current with a max current of 10-3 Amps per square centimeter and an emission rate of 0.01 Amps. It would have been obvious to one of

ordinary skill in the art at the time the invention was made to have the emission current greater than 10-3 Amps per square centimeters and an emission rate of 0.01 Amps to provide higher luminance. (Column 2, lines 24-26) Chuman discloses all of the limitations except for an insulator layer formed on electron layer with an aperture. Whereas Moyer discloses an electron emission control (Fig. 3) that emits electron as well as photons and contains an insulating layer (38) with an aperture formed there through. The insulating layer is formed to insulate the electron supply layer. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the electron emission device of Chuman by incorporating an insulating layer for insulating the electron supply layer as taught by Moyer. Chuman and Moyer disclose all of the limitations except for an adhesive layer. Whereas Huang discloses an emitter that contains an adhesive layer formed to improve adhesion. (Column 3, lines 60-67) Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Chuman and Moyer by incorporating an adhesive layer to improve adhesion between the layers as taught by Huang.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kiesha L. Rose whose telephone number is 703-605-4212. The examiner can normally be reached on M-F 8:30-6:00 off 1st Friday.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

KR
KLR

July 12, 2002


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